

WHAT IS CLAIMED IS:

1. A lubricating composition comprising:

5 a major amount of an oil of lubricating viscosity;

a mixture of neutral and overbased metallic detergents; and

a minor amount of at least one trinuclear molybdenum compound.

10

2. The composition of claim 1 wherein the trinuclear molybdenum compound is represented by the formula  $Mo_3S_kL_nQ_z$  where L is an independently selected ligand, n is from 1 to 4, k is from 4 to 7, Q is a neutral electron donating moiety and z is from 0 to 5.

15

3. The composition of claim 2 wherein the neutral and overbased metallic detergents are selected from the group consisting of alkali and alkaline earth metal sulfonates, phenates, alkylsalicylates and mixtures thereof.

20

4. The composition of claim 3 wherein the amount of detergents is sufficient to provide the composition with a sulfated ash content in the range of about 0.2 wt % to about 2.0 wt %.

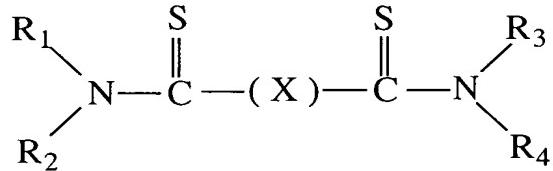
25

5. The composition of claim 4 wherein the trinuclear molybdenum compound constitutes from about 0.1 vol % to about 2.0 vol % based on the volume of the total lubricant composition.

6. The composition of claim 5 including a minor amount of a dihydrocarbyl thiocarbamoyl compound.

30

7. The composition of claim 6 wherein the dihydrocarbyl thiocarbamoyl compound has the formula



5 where  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are the same or different alkyl groups of from 3 to 30 carbon atoms;  $X$  is  $S$ ,  $S-S$ ,  $S-(CH_2)_yS$ ,  $S-CH_2CH_2(CH_3)-S$ ; and  $y$  is an integer of 1 to 3.

8. A lubricating oil composition comprising:

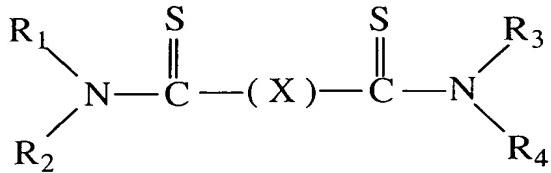
10 a major amount of an oil of lubricating viscosity;  
a mixture of neutral and overbased metallic detergents selected from the group consisting essentially of alkaline earth metal sulfonates, phenates,  
15 alkylsalicylates and mixtures thereof in an amount sufficient to provide the composition with a sulfated ash content of from about 0.2 wt % to about 2.0 wt %;

20 a trinuclear molybdenum compound having the formula



where  $L$  is an independently selected ligand,  $n$  is from 1 to 4,  $k$  is from 4 to 7,  $Q$  is a neutral electron donating moiety, and  $z$  is from 0 to 5;

25 from 0 to 2.0 vol % of a dihydrocarbyl thiocarbamoyl compound having the formula;



where  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are the same or different alkyl groups of from 3 to 30 carbon atoms;  $X$  is  $S$ ,  $S-S$ ,  $S-CH_2-yS$ ,  $S-CH_2CH_2(CH_3)-S$ ; and  $y$  is an integer of 1 to 3;

the amount of trinuclear molybdenum compound and dihydrocarbyl thiocarbomyl compound being in the range of about 0.1 vol % to about 2.0 vol %.

10

9. A method for enhancing the life of a lubricating oil as evidenced by a reduction in viscosity increase, oxidation and nitration, the method comprising:

15

adding to the lubricating oil additives comprising:

a mixture of neutral and overbased metallic detergents selected from the group consisting essentially of alkaline earth metal sulfonates, phenates, alkylsalicylates, and mixtures thereof in an amount sufficient to provide the 20 composition with a sulfated ash content of from about 0.2 wt% to about 2.0 wt%;

at least 0.1 vol% of a trinuclear molybdenum compound having the formula

25

$Mo_3S_xL_xQ_z$

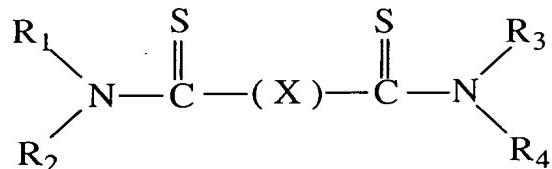
Where L is an independently selected ligand, n is 1 to 4, k is 4 to 7, Q is a neutral electron donating moiety, and z is 0 to 5;

a dihydrocarbylthiocarbomyl compound;

5

the amount of trinuclear molybdenum compound and dihydrothiocarbomyl compound being in the range of 0.1 vol% about 2.0 vol%.

10. The method of claim 9 wherein the dihydrothiocarbomyl compound has the formula



where R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are the same or different alkyl groups of from 3 to 30  
15 carbon atoms; X is S, , S-S, S -(CH<sub>2</sub>)<sub>y</sub>S, S-CH<sub>2</sub>CH<sub>2</sub>(CH<sub>3</sub>)-S; and y is an integer of 1 to 3.